GAMING SYSTEM CUSTOMER SERVICE TECHNIQUES

BACKGROUND OF THE INVENTION

[0001]   This invention relates to gaming systems, and more particularly relates to communications with gaming locations and gaming service stations.

[0002]   A large casino typically employs thousands of gaming locations that include non-machine games and machine games. Users of the games typically desire to place orders or reservations as they play, and they may desire to exchange messages with other users. Messaging systems used in casinos in the past have failed to provide such capability. For example, U.S. Patent No. 5,429,361 (Raven et al., issued July 4, 1995), describes a 12 character dot-

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matrix LED display 30 that can display messages to a player and a keypad that the player can use to send messages to a control unit. However, the system is not sufficiently interactive and flexible to allow users to efficiently place orders or reservations or to exchange messages.

[0003] U.S. Patent No. 5,951,397 (Dickinson, issued Sept. 14, 1999) and U.S. Patent No. 6,210,279 (Dickinson, issued April 3, 2001) each discloses a touch screen used in a gaming machine. However, the touch screens are CRTs and are used for operation of the game. Such screens would be too large for effective use in a messaging system suitable for coupling to a gaming machine.

[0004] This invention addresses the problems presented by the foregoing patents and provides a solution.

BRIEF SUMMARY OF THE INVENTION

[0005] One form of the invention is useful in a gaming system comprising a service station and at least a first gaming location. In such an environment, communication with the service station and the first gaming location is enabling by providing an interactive first communication

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unit operable from the first gaming location, including a first display visible from the first gaming location, an interactive second communication unit operable from the service station, including a second display visible from the service station, and a network arranged to transmit data so that messages are displayed on the first display and the second display.

[0006]   Another apparatus form of the invention is useful in a gaming system comprising a first gaming location and a second gaming location.   In such an environment, communication between the first and second gaming locations is enabled by providing apparatus comprising an interactive first communication unit operable from the first gaming location, including a first display visible from the first gaming location and arranged to display a first message, an interactive second communication unit operable from the second gaming location, including a second display visible from the service station and arranged to display a second message, and a network arranged transmit data between the first and second gaming locations, whereby the first and second messages are exchanged.

[0007]   Another apparatus form of the invention is useful in a gaming system comprising a gaming machine including a game display.   In such an environment, apparatus for displaying graphics images unrelated to the operation of the gaming machine comprises a memory for storing image data and a graphics display arranged to display graphics images.   A graphics display controller is arranged to generate the graphics images on the display in response to the image data.

[0008]   One method form of the invention is useful in a gaming system comprising a service station and at least a first gaming location.   In such an environment, communication with the service station and the first gaming location is enabled by providing steps comprising generating messages at the first gaming location and displaying messages visible from the first gaming location interactively, generating messages at the first service station and displaying messages visible from the service station interactively, and transmitting the generated messages.

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[0009]   Another method form of the invention is useful in a gaming system comprising a first gaming location and a second gaming location.   In such an environment, communication between the first and second gaming locations is enabled by providing steps comprising generating messages at the first gaming location and displaying messages from the second gaming location at the first gaming location interactively, generating messages at the second gaming location and displaying messages from the first gaming location at the second gaming location interactively, and transmitting the messages between the first and second gaming locations.

[0010]   Another method form of the invention is useful in a gaming system comprising a gaming machine including a game display.   In such an environment, graphics images unrelated to the operation of the gaming machine may be displayed by the use of a liquid crystal display by steps comprising storing image data and generating the graphics images in response to the image data.

[0011]   By using techniques of the foregoing type, communications with gaming locations and/or service

stations may be carried out with a degree of ease and reliability previously unavailable.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]   Figure 1 is a schematic block diagram of one form of gaming system employing a gaming location message display made in accordance with one form of the invention.

[0013]   Figure 2 is a block diagram of one of the gaming location message displays shown in Figure 1, together with a game video display.

[0014]   Figure 3 is a block diagram of the message display shown in Figure 1 with an exemplary service menu, including a personal service option, a reservation option and a personal message option, and a message menu with a displayed advertisement.

[0015]   Figure 4 is a block diagram of the message display shown in Figure 1 with a personal service menu, including a drink option, displayed in response to the selection of the personal service option shown in Figure 3.

[0016]   Figure 5 is a block diagram of the message display shown in Figure 1 with a drink menu, including a soft drink option, displayed in response to the selection of the drink option in Figure 4.

[0017]   Figure 6 is a block diagram of the message display shown in Figure 1 with a soft drink menu displayed in response to the selection of the soft drink option in Figure 5, including an image of a touch screen numerical keypad for entering quantity.

[0018]   Figure 7 is a block diagram of the message display shown in Figure 1 with a reservation menu, including a ticket for show option, displayed in response to selection of the reservation option shown in Figure 3.

[0019]   Figure 8 is a block diagram of the message display shown in Figure 1 with a show ticket reservation menu, including a comedy option, displayed in response to selection of the ticket for show option shown in Figure 7.

[0020]   Figure 9 is a block diagram of the message display shown in Figure 1 with a comedy reservation menu,

including a show x option, displayed in response to selection of the comedy option shown in Figure 8.

[0021]   Figure 10 is a block diagram of the message display shown in Figure 1 with a show x reservation menu displayed in response to selection of the show x option of Figure 9.

[0022]   Figure 11 is a block diagram of the message display shown in Figure 1 with an image of a touch screen numerical keypad displayed in response to selection of the "other" option of Figure 10.

[0023]   Figure 12 is a block diagram of the message display shown in Figure 1 with a reminder message displayed in response to selection of the show x reservation selection shown in Figure 10.

[0024]   Figure 13 is a block diagram of the message display shown in Figure 1 with a personal message menu displayed in response to selection of the personal message option shown in Figure 3.

[0025]   Figure 14 is a block diagram of the message display shown in Figure 1 with an image of a touch screen

alphanumeric keypad displayed in response to at least one of options 1, 2 or 3 shown in Figure 13.

[0026]   Figure 15 is a block diagram of a second message display shown in Figure 1 illustrating delivery of the personal message shown in Figure 13.

[0027]   Figure 16 is a block diagram of the second message display shown in Figure 15 with a reply message menu.

[0028]   Figure 17 is a block diagram of the service center display shown in Figure 1 with exemplary messages received at the service center.

[0029]   Figure 18 is a block diagram of the service center display shown in Figure 17 with an exemplary reply menu.

[0030]   Figure 19 is a block diagram of the second message display shown in Figure 15 illustrating delivery of a message from the service center and providing for a yes or no response.

DETAILED DESCRIPTION OF THE INVENTION

[0031]   Referring to Figure 1, gaming system 100 includes a several gaming locations 102, 104 and 106 that may include various non-machine games, such as craps and blackjack, or may include game machines, such as slot machines, video poker machines, video roulette machines, and the like.

[0032]   Gaming location 102 is exemplary of gaming locations 104 and 106. If gaming location 102 includes a gaming machine 102A, a game controller 108 and a game display 110 are provided. For both a non-machine gaming location and a game machine location, a location interface 112, an optional alphanumeric keypad 114 and a touch screen message display 118 are provided. Display 118 may comprise a touch screen liquid crystal display (LCD) similar to the displays used in laptop computers. Display 118 is coupled to or located inside the cabinet of gaming machine 102A, and may, for example, take the form of a rectangle about 3 inches high and 4 inches wide. Using an LCD inside a gaming machine in order to display graphics images and to display a numeric or alphabetic input image is advantageous because it eliminates the need for a separate keypad for

the interactive entry of data. In addition, an LCD requires less space than many other types of displays. These considerations are important, because there usually is very limited space inside or adjacent a gaming machine. An optional alphanumeric keypad 114 may be placed for convenient manipulation while a player is using gaming location 102.

[0033] A conventional graphics display controller 117 controls display 118. Controller 117 can display either vector graphics or bit-mapped graphics on display 118, depending the type of application program stored in memory 146 used for graphic display and the type of data stored for purposes of generating graphics images. The image data resulting in graphics images can be stored in memory 146 or can be stored in memory 121 and transmitted via network 126 to controller 117 for a particular graphic image. The image data can be either vector data or bit-mapped data. CPU 144 controls the transfer of the image data to controller 117 in response to application programs stored in memory 146 that determine the location of the graphics

images on display 118 and also determine the time at which the graphics displays are presented.

[0034]   Interface 112, optional keypad 114, controller 117 and display 118 comprise an interactive communication unit 119. Each of the gaming locations 104 and 106 include an interactive communication unit like unit 119.   For example, gaming location 106 includes a communication unit 119A like unit 119. In one embodiment, a player enters alphabetic and numeric information by touching display 118. In such an embodiment, keypad 114 may not be provided. For the non-machine gaming locations, interface 112 comprises a communication controller 148, such as a modem.

[0035]   In this specification and claims, interactive means capable of accepting input from a human. Communication unit 119 comprises one or more programs for accepting such input from, for example, a touch screen alphanumeric keyboard image. Such programs are well known to those skilled in computer communication.

[0036]   For a game machine location, interface 112 may include, for example, an RS485 interface such as that implemented by a Sentinel™ Interface from Casino Data

Systems. Other interfaces and network architectures (e.g., Ethernet, parallel port, and the like) may be substituted however. Furthermore, interface 112 may implement, for example, the IGT Gaming SAS™ communication protocol or the CDS GDAP™ communication protocol for communication with gaming machine 102A, or a custom communication protocol. In gaming machine 102A, message display 118 may be coupled to the frame of the gaming machine or may be inside the cabinet of the gaming machine. However, any means of associating display 118 with gaming machine 102A may be used as long as display 118 is visible from gaming machine 102A.

[0037]   Interface 112 is programmed to provide an interactive messaging operation. That is, user message activity, such as touching an active area of display 118 or entering information from keypad 114, causes a response from or action by system 100. One such response is the sending of data over network 126 to another location within system 100 so that a message is displayed. Another response is the display of a menu that depends on the area touched and/or user preferences.

[0038] User preferences may be stored in interface memory 146 that is controlled by a CPU 144. CPU 144 controls the sending of messages by gaming location 102, the receipt of messages by gaming location 102 and the display of messages by gaming location 102 in a well known manner.

[0039] Game controller 108 is responsible for operation of the gaming machine 102A. Thus the game controller may include a microprocessor, memory, game software, and support circuitry to implement a slot machine or other type of game. The display 110 provides displays necessary for the play of the game, such as a display of slot machine rotors.

[0040] Gaming location 102 also includes a club card reader 150 that can read a MAG number located on a magnetic strip of a club card 152, which may, for example, be a smart card. The MAG number is unique for each player. Card 152 also sometimes bears a player ID number that is human readable, but is not machine-readable. The card reader sends the MAG number to central authority 120, which converts the MAG number to an OCR number. This feature

prevents any potential misuse due to fraudulent creation of a bogus club card. Memory 121 maintains a table that correlates OCR numbers with player ID numbers. An example of misuse prevented or inhibited by converting the MAG number to an OCR number is as follows. The clerks at the stations generally have access to the OCR numbers, but not the MAG numbers. As a result, a person operating outside system 100 could not duplicate a new player card with a MAG number corresponding to an existing club card. If such a person could duplicate an existing club card, the person may be tempted to use the duplicate card to cash out a player's account. The conversion of the MAG number to an OCR number is an important feature that inhibits such temptation.

[0041] Central authority 120 translates an OCR number to a corresponding player ID number. This feature allows a single player ID number to identify more than one OCR number. The player ID number can be used by the central authority to address the value of an account corresponding to the player ID number or to access preferences of the player. Thus, the central authority keeps no account value

or preferences corresponding to the MAG number or OCR number; it only keeps an account value and preferences corresponding to the player ID number, correlated with the OCR number by a table.

[0042] Player preferences may include preferences for drinks, cigarettes, snacks and the like. In addition, memory 121 may store a preference authorizing the player to be located by having central authority 120 correlate his player ID number with the gaming location at which his club card 152 was read.

[0043] When central authority 120 locates a player, it sends data to station 132 via network 126 that results in an electronic or printed display. For example, a printed display may result in a map 136 printed by a printer 138 attached to the station. Alternatively, the map may be displayed on display 134. The map provides a floor plan of the casino or other facility in which system 100 is located, the location of the service station and the location at which card 152 was entered in a card reader, such as gaming location 102.

[0044]   Club cards are generated by having a player fill out a form and by submitting the form to a clerk at a station that is equipped with a card creator (not shown). Typically, a card creator is located at only one or two work stations, such as service station 132, within a gambling facility.   The clerk keys information into the station, and the information is transmitted to central authority 120, which then generates an OCR number, corresponding MAG no. and player ID number for the creation of a new club card.   The OCR number and player ID number are stored in the data base in memory 121 in the manner previously described.   The central authority then causes the card creator to create a new club card with the stored player ID number and MAG number.   Thus, the OCR number is not stored in memory 121 by having the new club card read by a card reader.   Once the MAG, OCR and player ID numbers are created, they cannot be changed by a person operating outside system 100.

[0045]   Central authority 120 includes a central processing unit (CPU) 122 that operates through a network interface 124 and a network 126 to enable communication of

the preferences with gaming locations 102, 104 and 106.
Network 126 may be a conventional local area network, which
allows messages to be sent directly between any of gaming
locations 102, 104 and 106, service station 132 and central
authority 120.   Memory 121 also may store data for various
displays shown in Figures 2-19.   Alternatively, the data
for the displays may be stored locally in the memories for
each of the gaming locations, such as memory 146.

[0046]   Service stations, such as station 132, connect to
central authority 120 and gaming locations 102, 104 and 106
over network 126.   Service station 132 includes an
interface like interface 112, a touch screen display 134
like display 118 and a keypad 114B like keypad 114, as well
as a communication unit 135 like unit 119.   Service
stations typically are located near a source of drinks and
snacks that may be ordered by players or users of system
100.   Several stations, like station 132, typically are
scattered throughout a large gaming facility.

[0047]   Figure 2 illustrates message display 118 in
relationship to game display 110.   Display 118 illustrates
an exemplary menu of options 160 for a player or user of

system 100, as well as an exemplary space for receipt of messages 162. Display 118 may be implemented as a window in display 110.

[0048] Figure 3 illustrates display 118 with an exemplary advertisement 164. Any type of advertisement may be generated by central authority 120 and sent to any gaming location for display. Figure 3 also shows an exemplary menu by which a user may chose the type of service desired by touching an appropriate portion of display 118 or entering a corresponding number on keypad 114. The advertisement may be displayed without the menu if desired.

[0049] Figure 4 illustrates display 118 with an exemplary personal service menu displayed in response to a player or user touching the term "PERSONAL SERVICE" on display 118 or entering the number 1 on keypad 114. The items in the personal service menu may depend on the preferences accessed from memory 121 when the user's club card is read by reader 150. For example, a smoker whose preferences include cigarettes will have item 2 "CIGARETTES" displayed, whereas a non-smoker whose

preferences do not include cigarettes will not have item 2 displayed.

[0050]   Figure 5 illustrates an exemplary drink menu displayed in response to a player or user touching the phrase "DRINK" on the display shown in Figure 4, or entering the number 1 on keypad 114. The drinks displayed may depend on the player preferences accessed from memory 121.

[0051]   Figure 6 illustrates an exemplary soft drink menu displayed in response to a player or user touching the screen 118 at the phrase "SOFT DRINK" on the display shown in Figure 5. The listed drinks may depend on the player preferences accessed from memory 121. When a player selects a particular drink from the Figure 6 display by touching display 118 at the text corresponding to the desired drink, a numeric input image, such as an image of a numeric keypad 170, is displayed as shown. In this example, it is assumed that the player touched "7UP" by the number 2 or touched the number 2. The text "EN" provides an enter function and an arrow 172 provides a backspace function. Other forms of a numeric input image may be

displayed. A box 174 displays the number entered by the player from keypad image 170. The number indicates the quantities of drinks desired by the player. Each of displays 118, 118A and 134 can display a numeric input image like image 170.

[0052] Communication unit 119 generates a message identifying the drink selected by touching display 118 (e.g., drink number 2) and the quantity selected by touching a number on the keypad image 170 (e.g., the number 1). The message is transmitted via controller 148 and network 126 to service station 132 and is displayed on message display 134.

[0053] Figure 7 illustrates an exemplary reservation menu displayed on display 118 in response to a player or user touching the phrase "RESERVATION" or the number 2 on the display shown in Figure 3, or by entering the number 2 on keypad 114. The message display includes graphics images in the form of a pair of masks 200, a cake 202 and a car 204. The graphics images may be in color. For example, masks 200 may be displayed in red, cake 202 may be displayed in yellow, and car 204 may be displayed in blue.

Many other forms of graphics images can be used to illustrate the text appearing on any of the displays described in this specification. Alternatively, the graphics images can be shown alone without any text.

[0054] Figure 8 illustrates an exemplary show ticket reservation menu displayed on display 118 in response to a player or user touching the phrase "TICKET FOR SHOW" or the number 1 on the display shown in Figure 7, or by entering the number 1 on keypad 114. The items listed in Figure 8 may depend on the player's preferences stored in memory 121.

[0055] Figure 9 illustrates an exemplary comedy reservation menu displayed on display 118 in response to a player or user touching the phrase "COMEDY" or the number 1 on the display shown in Figure 8, or by entering the number 1 on keypad 114. The items listed may depend on the player's preferences stored in memory 121.

[0056] Figure 10 illustrates an exemplary show x reservation menu displayed on display 118 in response to a player or user touching the phrase "SHOW X" or the number 1 or the number 2 on the display shown in Figure 9, or by

entering the number 1 on keypad 114. The user enters the number of tickets desired in the blank space provided by using keypad 114 or by touching the appropriate number below the legend "NUMBER OF TICKETS." If the desired number of tickets is not displayed, the player touches "OTHER" in order to display the image of numeric input keypad 170 as shown in Figure 11. The player then enters the desired number of tickets by touching an appropriate combination of numbers on image 170. Box 174 displays the number entered by the player.

[0057] Communication unit 119 generates a message identifying the desired show, date(s), time(s) and number of tickets indicated by the player's touching of display 118 as described in connection with Figures 7-11. The message is transmitted via controller 148 and network 126 to service station 132 and is displayed on message display 134. Alternatively, the message may be sent to a ticket handling facility 158 of a producer or ticket agent of the requested show via a network 159, such as the Internet through central authority 120.

[0058]   Figure   12   illustrates   an   exemplary   reminder
message sent to display 118 from central authority 120 or
station 132.

[0059]   Figure   13   illustrates   an   exemplary   personal
message menu displayed on display 118 in response to a
player or user touching the phrase "PERSONAL MESSAGE SENT"
or the number 3 on the display shown in Figure 3, or by
entering the number 3 on keypad 114.   When the player
touches any of numbers 1-3 shown in Figure 13, or touches
the text opposite the numbers, an alphanumeric input image,
such as an image of an alphanumeric keypad 180, is
displayed on display 118 as shown in Figure 14.   Arrow 182
represents   a   backspace   function,   the   word   "ENTER"
represents an enter function.   The word "SHIFT" represents
a shift function between upper case and lower case letters.
The punctuation marks shown in image 180 have their normal
meanings.

[0060]   The player causes controller unit 119 to generate
an appropriate message by entering the name of a person for
whom the message is intended (e.g., John Doe), a game
location (e.g., 106) or player ID number, and a message,

such as "MEET ME AT THE RESERVATION DESK AT NOON," by touching display 118 at the appropriate numbers and letters of image 180. The data entered by the player is displayed as shown in Figure 14. Each of displays 118, 118A and 134 can display an alphanumeric input image like image 180. Alternatively, the message shown in Figure 14 may be typed by the player or user by operating keypad 114.

[0061]   Communication unit 119 generates a message based on the data entered by the player as explained in connection with Figure 14. The message includes an identification of the gaming location (e.g., 106) to which the message is to be sent or a player ID number. The message is transmitted via controller 148 and network 126 to central authority 120. If a player ID number was entered, central authority 120 checks the ID numbers of players whose cards have been read by the system to find a match. If a match is located, the message is forwarded to the gaming location at which the card was read. If no match is found, the system stores the message in memory 121. When the player with the correct ID number inserts his card into a reader, the message is retrieved from

memory and is forwarded to the proper gaming location for display. In addition, central authority 120 finds the name of the current user of gaming location 102 from the information on the club card 152 used to initiate the gaming location so that the name of the sender can be displayed at the gaming location receiving the message. If a gaming location was entered by the player, central authority sends the message to the proper gaming location, such as location 106, and displays on display 118A the name of the sender, the date, the time the message was sent and the message as shown in Figure 15.

[0062] Figure 15 illustrates the an exemplary message menu displayed on display 118A of gaming location 106 showing the message sent from gaming location 102 to gaming location 106 over network 126 through central authority 120. If a gaming location is entered by the player as explained in connection with Figure 14, the message may be sent directly from gaming location 102 to gaming location 106 without being transmitted to the central authority 120. The date and time at which the message was sent are displayed as shown in Figure 15.

[0063]   The player at gaming location 106 may reply to the message shown in Figure 15 by touching display 118A at the "REPLY" text, at the number 4 to the left of the reply text, or by entering the number 4 on keypad 114A.

[0064]   Figure 16 illustrates an exemplary reply message menu displayed on display 118A in response to a player or user touching the phrase "REPLY" or the number 4 on screen 118A or by entering the number 4 on keypad 114A. The reply menu provides for sending copies of the message to various locations. The personal message menu shown in Figure 13 can be modified to also provide for sending of copies.

[0065]   A reply message is generated and sent in the same manner described in connection with Figures 13 and 14. When the player touches any of numbers 1-3 or the text opposite any of the numbers, a display of the type shown in Figure 14 is generated on display 118A. The player then enters the reply data using image 180 in the manner previously described.

[0066]   Figure 17 illustrates exemplary messages received at service station 132 and displayed on display 134 from gaming locations 102 and 104.   In response to such

messages, workers in the gaming facility may attempt to fill the order and bring it to the player or user. The location of the requester of service is displayed to help facilitate delivery. The time is posted to ensure that orders are processed in the order in which they were sent.

[0067] Figure 18 illustrates an exemplary service station reply message menu displayed in response to a work station attendant touching the phrase "REG. COKE" on the display 134 shown in Figure 17, or entering the number 1 on keypad 114B. The attendant can enter a message by touching the number 2 or touching the phrase "CONTENT OF MESSAGE" shown in Figure 18 which causes display of an alphanumeric input image on display 134 like the image shown in Figure 14. A message then is entered in the manner described in connection with Figure 14. For example, the message may be "WE ARE OUT OF REGULAR COKE. IS A DIET COKE OK?" By enabling interactive communication between a gaming location and a service station, the delivery of desired goods to gaming locations is facilitated.

[0068] Communication unit 135 generates a message based on the data entered by an attendant as explained in

connection with Figures 14 and 18. The message includes an identification of the gaming location (e.g., 102) to which the message is to be sent. The message is transmitted via a serial controller in service station 132 and network 126 to gaming location 102 and is displayed on display 118 in the manner shown in Figure 19.

[0069] The message from the service center is displayed with a YES button 190 and a NO button 191. The player at gaming location 102 responds to the message by touching display 118 at either the word "YES" or "NO." Communication unit 119 generates a message based on the touching of button 190 or 191. The message includes an identification of service station 132 to which the message is to be sent. The message is transmitted via serial controller 148 and network 126 to service station 132 and is displayed on display 134 so that an attendant will know the drink preferred by the player.

[0070] Those skilled in the gaming and computer arts are able to program the interfaces and central authority to provide the displays and interactivity described in the accompanying drawings and described in this specification.

[0071] The "OTHER" options referenced in the drawings are handled by displaying a numeric or alphanumeric input image depending on context.

[0072] While the invention has been described with reference to one or more preferred embodiments, those skilled in the art will understand that changes may be made and equivalents may be substituted without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular step, structure, or material to the teachings of the invention without departing from its scope. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed, but that the invention will include all embodiments falling within the scope of the appended claims.